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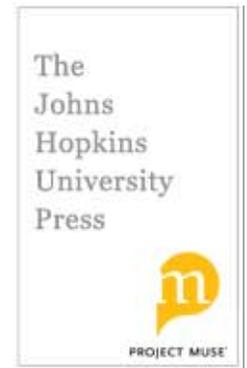
Louisa May Alcott: Her Mysterious Illness

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LOUISA MAY ALCOTT

her mysterious illness

NORBERT HIRSCHHORN* AND IAN A. GREAVES†

ABSTRACT Louisa May Alcott (1832–1888), famous in her own time and immortalized in ours as a major figure of the “American Renaissance,” died at the age of 55 after intermittent suffering over 20 years. Her illnesses evoked intense interest in her time and in ours. Alcott tracked her signs and symptoms (in letters and journal entries), which included headaches and vertigo, rheumatism, musculo-skeletal pain, and skin rashes; in her final years she recorded severe dyspepsia with symptoms of obstruction, and headaches compatible with severe hypertension. Her death came suddenly with a stroke. Standard biographies propose that her illnesses were due to acute mercury poisoning from inorganic mercury medication she received for a bout of typhoid in 1863, a cause she herself believed. We have reviewed Alcott’s observations, as well as those of others, and have determined that acute mercury poisoning could not have caused her long-term complaints. We propose instead that Alcott suffered a multi-system disease, possibly originating from effects of mercury on the immune system. A portrait of Alcott raises the possibility that she had systemic lupus erythematosus (SLE).

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Keeping his gravity with an effort, Teddy pointed to a very bad portrait of Mrs. Jo, which hung behind the door, and afforded her much amusement, it was so dismal, in spite of a curious effect of light upon the end of the nose and cheeks as red as the chair she sat in.

—Louisa May Alcott, *Jo's Boys* (1886)

LOUISA MAY ALCOTT (LMA), beloved American author (*Little Women*, *Little Men*, *Jo's Boys*, among many other writings), was a robust young woman until she contracted typhoid fever in 1863 while nursing Union soldiers. Soon after, in her mid-30s, until her death at the age of 55, she was afflicted by headaches, fatigue, dizziness, and pain in her limbs. Severe dyspepsia and semi-invalidism also plagued her last three years, and sudden death followed the severest headache of all.

Various biographers have surmised that her illnesses were caused by the mercury she received in treatment for typhoid; that she took too many dangerous medications, including morphine; that she suffered from intestinal cancer; and at the last she died of meningitis. In this article we imagine ourselves clinicians reviewing a medical history of signs and symptoms as recorded by an articulate and observant patient in her journals and letters, as well as testimony by friends and relatives. We are thus able to propose a final cause of death, discuss the possible role of mercury in her illness, and suggest a unifying diagnosis for all her complaints.

TYPHOID AND MERCURY: THE PRECIPITATING EVENTS?

In 1858, at age 26, LMA walked from Concord to Boston (a distance of 20 miles) in five hours, and still had enough gusto to socialize at a party that evening (Eiselen and Phillips 2001, p. 132). In December 1862 she volunteered to nurse wounded Union soldiers at a makeshift hospital in Washington, D.C. Within a few weeks, however, she was struck by an illness her physicians diagnosed as typhoid, with signs and symptoms as classically described in William Osler's 19th-century textbook of medicine (Osler 1898, pp. 14, 27–29). LMA described her ordeal, which began with pneumonia:

Ordered to keep [to] my room being threatened with pneumonia, sharp pain in the side, cough, fever & dizziness. . . . Dr. Smith creaks up twice a day to feel my pulse, gives me doses & ask if I am at all consumptive, or some other cheering question. Dr. Otman examines my lungs & looks sober. (LMA, *Journals* 1999, p. 115)

While at the Union Hospital she was treated with heavy doses of inorganic mercury, a circumstance to which we will return. Two weeks after her illness began, she was brought home to Concord, semi-conscious, by her father Bronson Alcott (ABA), and she began to have vivid nightmares or hallucinations, which she

recalled the next month as “strange fancies” (LMA *Journals* 1999, pp. 116–17). Her father reported that she also suffered high fevers spiking twice daily (ABA, *Letters* 1969, L63–64, p. 334). Her illness lasted about a month, followed by a prolonged convalescence, as her father’s journal entries record:

- February 1: “Her symptoms are encouraging, though the delirium rages with periods of fever.”
- February 4, 5, 6: “Louisa’s fever abates, and she comes to her right mind.”
- February 22: “Louisa comes down stairs to breakfast.”
- March 22: “Louisa leaves her chamber and begins to clothe herself with flesh after the long waste of fever.” (ABA, *Journals* 1938, pp. 354–55)

LMA recovered and remained relatively well for the next few years, as far as her own records tell us. Her writings were being published, she was earning needed income for the family, and she managed an extensive sojourn in Europe from June 1865 to July 1866, during which time her journal entries were generally upbeat (LMA, *Journals* 1999, pp. 141–52). But when she returned she confronted her mother’s deteriorating health, the family’s debts incurred by her father’s visionary schemes, and she began to be troubled by intermittent bouts of widespread and debilitating symptoms, which increased in duration and severity until her demise 22 years later.

LMA’s “chief complaints” cluster into three major complexes: headache, musculo-skeletal pain and inflammation, and gastrointestinal. The following narrative traces each cluster chronologically, as is the custom in presenting medical histories.

HEADACHE

LMA first mentioned headache in her journal entry of January 1867: “Sick from too hard work. Did nothing all the month but sit in a dark room and ache. Head & eyes full of neuralgia” (LMA, *Journals* 1999, p. 157). According to a contemporary dictionary, *neuralgia* generically meant “pain of the nervous system” (Nuttall 1866). Sensitivity to light and pain in the eyes suggest migraine, but she did not record auras, nausea or vomiting, or one-sidedness of the pain, diagnostic criteria of the International Headache Society (Cady, Schreiber, and Farmer 2004).

Her sickness was not trivial, lasting several months. Thus that spring: “Slowly mending. . . Still gaining” (LMA, *Journals* 1999, p. 157). A visitor in February 1867 noted: “Louisa Alcott has been alarmingly ill—not that her life was in danger but her writing organs—her head being overworked and taking revenge by neuralgia. She is now forbidden either to read or write—which is to her a great deprivation” (Frances Bellows Sanborn to Benjamin Lyman, Feb. 23, 1867; Cameron 1978, p. 45).

Nonetheless, with her hospital memoir and short stories being published, and a book for girls (that became *Little Women*) commissioned by Roberts Brothers, she could celebrate well-being at the start of 1868:

The year begins well and cheerfully for us all. . . . I am in my little room, spending busy, happy days, because I have quiet, freedom, work enough, and strength to do it. . . . My way seems clear for the year if I can only keep well. I want to realize my dream of supporting the family and being perfectly independent. Heavenly hope! . . . After last winter's hard experience, we cannot be too grateful. (LMA, *Journals* 1999, p. 162)

Yet when she completed the first volume of *Little Women* in mid-1868, 402 pages in just under two months, it was at a cost: "Very tired, head full of pain from overwork" (p. 166). "Headaches, cough, and weariness" are mentioned in early 1869. But these too proved intermittent as a note later that summer indicated (pp. 171–72).

LMA's complaints continued sporadically, as she noted in June 1871 upon return from a 14-month sojourn in Europe: "A happy month, for I felt well for the first time in two years. I knew it would n't last, but enjoyed it heartily while it did, and was grateful for rest from pain and a touch of that old cheerfulness. It was much needed at home" (pp. 178–79). LMA made no specific mention of headaches in her journal entries between 1874 and 1884; indeed, in late 1875, her father anticipated Louisa's restored health: "Her health is now much improved and we hope permanently established" (ABA, *Letters* 1969, L75–24, p. 660).

Soon after, however, the years grew especially calamitous: her mother died in 1877 after a prolonged illness, her young sister May succumbed to meningitis in 1879 (leaving behind an infant daughter), her beloved neighbor Ralph Waldo Emerson died in 1882, and in that same year her father was crippled by a stroke. Unsurprisingly, LMA then remained more often unwell, feeling "poorly" with neuralgia and requiring morphine for sleep (LMA, *Journals* 1999, p. 192). In 1877, while caring for her dying mother, she even felt "in danger of my life for a week." Moreover, there were fewer times when she could still write, as in this 1877 entry: "Felt very well, and began to hope I had outlived the neuralgic worries and nervous woes born of the hospital fever and the hard years following" (p. 205). By 1879, however, her strength was clearly on the wane:

Very poorly and cross. So tired of being a prisoner to pain. Long for the old strength when I could do what I liked & never know I had a body. Life not worth living in this way. But having overworked the wonderful machine I must pay for it, & should not growl I suppose as it is just. (p. 214)

We cannot tell from her records whether the on-and-off headaches were tension-type or migrainous. But by December 1884, when LMA restarted work on her final novel, *Jo's Boys*, the headaches clearly took on a new and alarming

aspect: “Wrote two hours for three days, then had a violent attack of vertigo, & was ill for a week. Head won’t bear work yet” (p. 245). Vertigo recurred in March 1885, along with an all-day headache, and in May she recorded, “head dizzy at times” (pp. 253–54, 259). (In today’s medical parlance, *vertigo* indicates that the room and objects seem to spin about the person, while *dizziness* means light-headedness, a sense of imbalance. At that time, however, *vertigo* and *dizziness* were used interchangeably.)

Although with migraine the number of attacks tend to diminish over time, by 1885 LMA’s headaches were present almost daily and took on certain specific symptoms of severe hypertension, as indicated in her journals and letters in the last three years of her life:

- Present in the early morning, often with occipital pain: “Back of head aches. Worse in morning & lying down. . . . But my head does ache a good deal, or feels hot & heavy, & back of neck *wooden*.” (LMA, *Letters* 1995, pp. 288n1, 306; original emphasis)
- Headache of pounding quality: “Another attack of vertigo. Ill for a week. . . . Head worked like a steam engine & would not stop.” (LMA, *Journals* 1999, p. 272)
- Failing vision: “Snow hurts my eyes. . . . To Dr H[unt] [ophthalmologist.]. Had eyes looked at again. Went to oculust [sic] for glasses.” (LMA, *Journals* 1999, pp. 329–30)
- Vasomotor instability: “I am still very lurchy when I walk & dizzy when I stoop”; “Vertigo on rising, headache in temples and over half head. Pressure over top of head & eyes. Sudden stooping, or mental exertion.” (LMA, *Letters* 1995, p. 288n1; LMA, *Medicine Book*)
- Irregular heart beat: “Heart bumped in eve. . . . Flutter.” (LMA, *Journals* 1999, pp. 294, 329)
- Chest pain in January 1888, six weeks before her death. (LMA, *Journals* 1999, p. 329)

In January 1888 LMA described the effects of her prolonged illnesses: “I look about 70—grey & wrinkled & bent & lame” (LMA, *Letters* 1995, p. 330; Figure 1). She died on March 6, surely from a cerebral hemorrhage. As recounted by a friend, Maria Porter (1892), LMA visited her dying father on Thursday, March 2. In a note to her sister on the morning of March 4, LMA complained of “a dull pain and a weight like iron on her head. . . . and in the evening came the fatal stroke of apoplexy followed by unconsciousness” (Shealy 2005, pp. 72–73). Her sister Anna also recalled the final days, beginning March 3:

Louisa’s death tho so sudden to us, was a glad release to her, and amid all our sorrow came the happy thought that it was just as she would have wished. No suffering, no parting, no consciousness that she was leaving us—a few brief



FIGURE 1

Louisa May Alcott in August 1887 (“I look about 70—grey & wrinkled & bent & lame”).

SOURCE: COURTESY OF CONCORD FREE PUBLIC LIBRARY.

hours and it was over. She had long wished to go, and had prayed that it might be thus. . . . [Bronson Alcott] died on Sunday [March 4], and early on the same day, I was sent for to Louisa, who had been taken ill the afternoon before [March 3], had gotten rapidly worse, and lay unconscious. . . . I went immediately to her, and remained until the end. She never knew me, but drifted quietly away as she had always prayed she might—painless & unaware of her condition, and our grief. She lay till early Tuesday [March 6] morning when first at dawn without a sigh she passed away. (Anna Alcott Pratt to Alfred Whitman, Feb. 17, 1889; Harvard University Houghton Library, bMS AM 1130[62])

Three biographies suggest LMA contracted meningitis after being exposed to cold when riding back from the visit to her father (Cheney 1889; Stern 1950; Shealy 2005). Given the sudden onset just one day after her excursion, the prior symptoms, and the apoplectic ending, meningitis is most unlikely. The idea may have originated in Anna’s first impression before the physician arrived: “Aunty has inflammation of brain & may not recover. Dr. Green comes soon and will pronounce upon the case more fully and decidedly” (Anna Alcott Pratt to her children, March [4], 1888; Harvard University Houghton Library, BMS AM

1130.15 [143–4]). We may assume that Dr. Green filed the death certificate, the cause given as “apoplexy,” the 19th-century term for stroke (Registry Division, City of Boston 1888).

MUSCULO-SKELETAL PAIN

The first intimation of an intermittent disease affecting LMA’s limbs was this observation in 1865 from a family friend, recollected 30 years later: “Louisa Alcott supposed that she was nearly well of her fever when inflammatory rheumatism set in. The worst of this was the loss of sleep which it occasioned. . . . Three years later she was in much better health, and had published ‘Little Women’” (Stearns 1895, p. 81). According to the Webster’s dictionaries of 1866 and 1883, “rheumatism” meant “A painful inflammation affecting muscles and joints of the human body, chiefly the larger joints, as the hips, knees, shoulders, &c.” LMA herself made no mention of “inflammatory rheumatism”—in fact, she seemed quite well during her tour of Europe in 1865–66 (Stern 1950). In 1868, however, while furiously turning out *Little Women*, LMA was forced to write, as she recalled, “with one arm in a sling, my head tied up & one foot in misery” (LMA, *Letters* 1995, p. 185). During her second trip to Europe in 1870–71, pain in one leg heralded a suffering that would plague her to the end of her life:

My poor old leg was so bad, I couldn’t bear it any longer. After two weeks of misery, and hearing there was an excellent English Dr. here [in France], I dashed off to him one day, and asked for something to make me sleep. . . . He said as the Drs. have done that it was rheumatism of the membrane next [sic] the bone, and that it was more painful than dangerous. He gave me [a] quieting pill, and some Iodine of Potash, recommended sleep and mattress, a little wine, and lots of sleep. Not to walk at all, but to drive a good deal. . . . I’m much better. My leg lets me sleep, and I eat and feel quite chipper again. (LMA, *Letters* 1995, pp. 134–35)

Her complaint was not just about pain but, as she told her family two weeks later, it also involved some kind of skin lesions that she called “bunches on my leg” (p. 137). Contemporary dictionaries define “bunch” as a “tumor, protuberance . . . a knob or lump.” LMA would use the term *bunch* again in 1887: “To see Dr. E. about bunch on neck. Swelling of gland” (p. 294).

Pain, probably with swelling, returned to one leg in the fall of 1874: “one [of] my highly connected limbs is afflicted with—let us say gout as rheumatism is such a vulgar malady—so much so—referring to the leg not the gout—that I cannot wear a boot with any comfort” (p. 184). The pain persisted for several weeks, such that she had to consult a bonesetter and use opiates: “Tried to work on my book, but was in such pain could not do much. Got no sleep without morphine. Tried old Dr. Hewett, who was sure he could cure the woe”; but by December her condition improved: “Better and busier than last month” (LMA, *Journals* 1999, pp. 192–93, 194 n9). However, “rheumatism” it was in 1885: “I

have had a nice turn of rheumatism in my right arm & hand, so could not use a pen” (LMA, *Letters* 1995, p. 287).

LMA blamed the physical effort of writing by hand for at least some of her pain, as this note in 1872 shows: “Busy with ‘Work.’ Write three pages at once on impression paper, as Beecher, Roberts, and Low of London all want copy at once.” And in a note appended sometime later she commented, “This was the cause of the paralysis of my thumb, which disabled me for the rest of my life” (LMA, *Journals* 1999, p. 184). She composed in such long stretches that to ease the strain she learned to write with either hand (Anderson and Wade 1995), and in her latter years her handwriting took a decided slant to the left. But by 1887 her pains were more generalized:

Pretty well, all *but* legs. Very spotty & stiff. Dr fears an abscess . . . legs very still and back lame. . . Very stiff. Lump under knee. . . Back very bad. . . Very lame, back bad. . . Legs too painful to sit up. Very hard time in bath with cramp. . . Sick and blue. Back very lame and legs worse. (LMA, *Journals* 1999, pp. 310–17)

At one point she resorted to crutches. Her legs were treated with packs of lobelia, a homeopathic remedy for sprains and bruises, and warm compresses (LMA, *Letters* 1995, pp. 323–24).

It is difficult to sort out all these signs and symptoms coming, as they did, over decades. At least one diagnosis is possible, that of gout, the term LMA herself suggested in 1874 when she couldn’t wear her boot “with any comfort” and required opiates; the swelling behind the knee LMA described is typical of Baker’s cyst due to escape of joint fluid seen in both inflammatory arthritis and gout (Cibere 2000; ISOST 2006). But three years earlier the good English doctor (whom we will soon meet again) surely would have recognized gout and not prescribed wine, as alcohol has long been considered to precipitate gout (Zhang et al. 2006). He instead diagnosed “rheumatism.” The late, severe pains in LMA’s back and legs thus suggest a generalized affliction of bone, including osteoarthritis or avascular necrosis.

GASTROINTESTINAL

As if LMA’s suffering from headache and musculo-skeletal pain were not enough, she was tormented in her final years with severe dyspepsia. The symptoms included acid regurgitation (which she called “brash”), nausea, constipation requiring enemas and cathartics, and, worst of all, some upper intestinal obstruction or spasm that prohibited her from taking solid food.

She first recorded this complaint in 1885: “Dyspepsia to add to my woes” (LMA, *Journals* 1999, p. 260). Contemporary dictionaries define *dyspepsia*: “Its symptoms are loss of appetite, nausea, heart-burn, acrid or fetid eructations, a sense of weight or fullness in the stomach.” LMA’s homeopathic physician tried

to encourage her to eat, but each time the food backed up on her and she retreated to gruel. As she wrote to a friend in 1887: "I gain strength on my gruel & broth & gems, & I chew meat, but I don't dare to swallow it because it worries me so. . . . a tender chop upsets me for the day" (LMA, *Letters* 1995, p. 306). And in her diary she noted, "No solid food but geum" (LMA, *Journals*, p. 290). "Gems" and "geum" are *Geum rivale*, gelsemium, a botanical used for intestinal complaints.

The intestinal complaints seemed to overshadow all others: "Gas has tormented me like Satan for some time, & I was very mad, because I felt better in other ways. . . . Brash bothers me" (LMA to Laura Hosmer, Aug. 8, 1887; Clifton Waller Barrett Library of American Literature, Special Collections, University of Virginia Library, MSS.6255-b [Box 2]). Thus another physician put her on a milk-only diet, every three hours, two quarts daily: "[Dr. Green] said liquid food for the poor 'tummy' & while it rests tonics for nerves & blood. So for a week I've lived on peptonized [rennetted] milk thickened with a wheat powder, once in three hours, & peace reigns. No pain, no gas, feel satisfied" (LMA, *Letters* 1995, pp. 323–24). The diet extended until the end: "I still live on my milk . . . milk gruel & cups of warm milk every 3 hours and peace reigns" (p. 331).

Physicians in LMA's day would have diagnosed "sclerotic gastritis," an upper-intestinal obstruction between the stomach and the esophagus due to scarring by acid, and featuring "early morning nausea, eructation of gas with bitter fluids brought up, constipation . . . treated with milk diet, 3–5 pints a day at least" (Osler 1898, pp. 466–69). Today this condition is called gastroesophageal reflux disease, or GERD. LMA also had to contend with constipation, requiring enemas and laxatives (LMA, *Journals* 1999, p. 290). The acid reflux likely caused a well-known complication, namely bronchial irritation (Jiang et al. 2003), which LMA reported: "[Dr. Wesselhoeft] said it was Bronchial Catarrh & had got deeply seated so it affected stomach & all. I went to him for the dyspepsia" (LMA, *Letters* 1995, pp. 293–94). Editor Madeleine Stern has suggested that LMA suffered intestinal cancer at the end (LMA, *Journals* 1999, p. 30); however a gastric or esophageal cancer with obstruction would not have had such a long course.

LMA spent the last year of her life cared for at the retreat owned by her homeopathic physician and friend, Dr. Rhoda Lawrence, a place she called "Saint's Rest." There she withered—"Lost 23 pds in six months"—and died (LMA, *Journals* 1999, p. 333).

WAS MERCURY POISONING TO BLAME?

During her illness with typhoid, LMA was undoubtedly treated with medicinal mercury. Calomel, mercurous chloride, was the most commonly prescribed medication at the time for all kinds of conditions, and in large doses. It was so abused by Union Army physicians that Surgeon General William A. Hammond banned it from use (Adams 1952). LMA herself mentioned being prescribed the "blue pill," which is elemental mercury (LMA 1960, p. 89).

It was customary to dose the patient with mercury to produce intense salivation, a sign to the physicians that the mercury was acting at its peak. At that point the mouth would become sore and the gums and tongue would swell. In severe cases, the breath would become fetid, teeth would fall out, and ulcers would develop inside the cheek, along the gums, and along the back of the throat (Stille and Maisch 1879; Wood and Bache 1865).

LMA described suffering at least two acute effects of mercury shortly after being dosed: “Such long long nights—such feeble, idle days, dozing, fretting about nothing; longing to eat, & no mouth to do it with, mine being so sore & full of all manner of queer sensations it was nothing but a plague” (LMA, *Journals* 1999, p. 117). Some years later she composed a humorous poem, “suggested by my late afflictions with my teeth,” in which she lamented the ones lost to various causes:

Where are those *toothies* now?
 One sleeps in the forests of the West,
 For in old Concord’s shade,
 It was the first that openly confest
 The ruin *Calomel* had made. . . . (LMA, *Letters* 1995, pp. 163–64).

During her convalescence she also described a “shaky hand-writing” found in her pocket diary (which no longer exists), due perhaps to acute mercury poisoning, or to her debility (LMA, *Journals* 1999, p. 117).

LMA was herself convinced that all her subsequent ailments were due to the mercury treatment, based on advice from the English physician she met in France in 1870. As she wrote to her family:

Dr. Kane who was army surgeon in India, and Dr in England for forty years, says, my leg trouble and many of my other woes, come from the calomel they gave me in Washington. He has been through the same thing with an Indian-Jungle-fever, and has never got the calomel out of him. The bunches on my leg are owing to that, for the mercury lies round in a body and don’t do much harm till a weak spot appears when it goes there and makes trouble. (LMA, *Letters* 1995, p. 137)

As noted earlier, Dr. Kane prescribed “Iodine of Potash.” In his day potassium iodide was used as an antidote to mercury (Kent n.d.). The hypothesis that acute mercury poisoning was the culprit has been given prominence by modern biographer Martha Saxton:

She was suffering from the degenerative effects of mercury poisoning caused by massive doses of calomel, which she had received as an army nurse during the Civil War. . . . After Christmas [1866] Louisa’s health gave way. Her exertions had been too great and activated the dormant mercury. . . . The mercury poisoning gave her more severe rheumaticlike pains, trembling, anxiety, irritability, weak-

ness, and a fluttering pulse. Any extra exertion made her gravely ill and shaky. These symptoms varied in their intensity, but they were always present and increased when she made any effort. (Saxton 1978, pp. 1, 293, 369)

We do not believe LMA's assortment of signs and symptoms resulted from acute mercury poisoning. First, a principal effect of chronic mercury poisoning is tremor, best seen in handwriting. There is no such evidence of a tremor in LMA's handwriting either soon after her recovery from typhoid, as her journal entry in 1863 shows, or much later, for example when reporting on the death of Ralph Waldo Emerson in 1882 (LMA, *Journals* 1999, illustrations opp. p. 102). Second, headaches, "neuralgia," "inflammatory rheumatism," and severe dyspepsia are not characteristic of chronic mercury poisoning. What is common, however, is "erythism," a behavioral complex including social isolation, extreme sensitivity to slights, irrational outbursts of rage, with little insight. We found no evidence of such behavior in LMA as demonstrated, for instance, in Abraham Lincoln, a chronic user of the "blue pill" (Hirschhorn, Feldman, and Greaves 2001). Instead, her journals and letters to friends and family display a lively wit, self-deprecating irony, patience, and grace, as well as a sober acceptance of her condition and place in the world. Of course, she had what she called her "moods," but these were well in place long before her doses of mercury, as she noted candidly in 1850: "My quick tongue is always getting me into trouble, and my moodiness makes it hard to be cheerful when I think how poor we are, how much worry it is to live, and how many things I long to do I never can" (LMA, *Journals* 1999, p. 61).

Finally, since there is no evidence that she ever again took mercury medication after 1863, those doses, *pace* Dr. Kane and Martha Saxton, would not have lain dormant, but would have cleared her body within a year. The half-life for the body burden of metallic or inorganic mercury salts is about one to two months. It takes roughly four half-lives to decay to a level of about 6% of the initial value, which is considered an insignificant residual. Thus after cessation of all exposure one would expect no more than 5–10% of the original burden to be present after four to eight months, and by a year this would likely be less than 1%. Of course, this assumes relatively normal renal function, and mercury can impair kidney function; even so, after two to three years one would expect only an insignificant amount of residue (Agency for Toxic Substances and Disease Registry 1999). Nonetheless, mercury may yet have played a surprising role in LMA's illness.

OTHER MEDICATIONS

The role of other medicines as causes of LMA's travails has, in our opinion, been exaggerated. LMA's biographer Madeleine Stern thought morphine a "possible inducer of illness" (LMA, *Journals* 1999, p. 30), but LMA was able to give up its use quite readily when not in pain and so should not be considered addicted:

“Bones ached less, and I gave up morphine, as sunshine, air, and quiet made sleep possible without it” (p. 179). Stern alluded to LMA’s writerly familiarity with hashish and opium, but as LMA herself noted: “I think my natural ambition is for the lurid style . . . I engage in gorgeous fancies” (LMA *Journals* 1999, pp. xxi–xxiv). Other biographers implicate LMA’s late use of “dangerous drugs, including poisons such as strychnine” (Eiselein and Phillips 2001, p. 86). LMA was a firm believer in homeopathy, however, and not in potent drugs: “I think [Dr Green, an herbalist] will cure me if any one can, for he gives little medicine & believes in plain food, water & sensible things” (LMA, *Letters* 1995, p. 321). In her own small *Medicine Book*, LMA recorded several homeopathic remedies that relate to her various ailments, including ignatia (amara beans, which contain strychnine, used as a tonic for the nerves), gelsemium (water avens, for dyspepsia), bryonia (wild hops, for headache and vertigo), aconite (for neuralgia and headache), chamomile (for sedation), hydrastis (goldenseal, for dyspepsia), and witch hazel (an emollient used for hemorrhoids; LMA n.d.). Her recipes accord with the homeopathic principle of dilution, and so were unlikely to cause much trouble.

A UNIFYING DIAGNOSIS?

At this point in taking a medical history, a clinician is left to decide whether the patient, Louisa May Alcott, suffered from several, seemingly unrelated chronic illnesses, sequentially or simultaneously involving the nerves, joints, back, skin, and intestine, with probable gout and hypertension; or whether all could be explained by one multi-system disease. We prefer the latter. Surely, if LMA were before us today we would probe more deeply into her history—there is a limit to what one can glean from the 19th-century records—and also order a full range of biological and radiological tests. Lacking that opportunity, we can only recall the old professor’s teaching: “Listen to the patient. She is telling you the diagnosis.”¹ Causes of multi-system disease include, among others, certain infections, diabetes, and autoimmune/connective tissue diseases. LMA always believed that her treatment with mercury during her bout with typhoid was the cause of all her travail. She may have had a point: mercury and other heavy metals are known to impair the immune system in rodents, producing characteristic autoimmune effects. Animals bred to be susceptible to autoimmune disease, such as lupus erythematosus, are especially vulnerable, as are humans (Bigazzi 1994; Rowley and Monestier 2005; Ziemba, McCabe, and Rosenspire 2006). Occupational exposure to mercury was a risk factor in a case-control study of persons developing the autoimmune disease, systemic lupus erythematosus, or SLE (Cooper et al. 2004).

We propose that LMA had some kind of autoimmune disease, and SLE is a likely candidate. SLE was first described clinically by Osler in 1895 (Greenberg

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FIGURE 2

George P.A. Healy portrait of Louisa May Alcott, ca. November 1870.

SOURCE: COURTESY OF ORCHARD HOUSE/THE L. M. ALCOTT MEMORIAL ASSOCIATION, CONCORD, MASSACHUSETTS.

and Michalska 1999). The disease attacks nerves, skin, bone, muscle, joints, kidneys, blood vessels, and the gastrointestinal tract (with esophagitis in particular; Appel 2000; Lee and Ramsey-Goldman 2005; Schur 1996, 2000). LMA may well have had an episode of gout, which can be precipitated by SLE due to renal damage, and renal damage would also be responsible for hypertension and stroke (Bajaj, Fessler, and Alarcon 2004; Ho, Lin, and Wu 2003). Migraine headaches are often a feature of SLE (Glanz et al. 2001). The course of LMA's illness, however, is otherwise atypical for SLE: we cannot show that she had definite symmetrical joint swelling, nor is there evidence for pleural or pericardial effusions (serositis). Without definitive biological tests, we can do no more than speculate.

But what attracted us to the possibility of SLE is an oil painting of LMA made by one of the 19th century's most famous and realistic portraitists, George P.A. Healy, an Alcott family friend (De Mare 1954). The painting hangs in LMA's Orchard House in Concord, Massachusetts (Figure 2). One common sign of SLE is the so-called "butterfly rash" (or "malar rash"), sharply demarcated over the upper cheeks and across the bridge of the nose. The rash is often a first indication of the disease and is frequently triggered by sunlight; it may be transient and thus mistaken for a sunburn (Rothfield 1993, p. 2143). The painting was executed sometime in 1870 when LMA was in Rome on holiday (Healy

1843–1953). LMA’s journals and her 1873 memoir of the journey, *Shawl-Straps*, record that she had had considerable exposure to Italian sunlight, in the north—“Heavenly days at the lakes”—in the “sunlit valley of the Arno,” and in Florence (LMA *Journals* 1999, p. 175; Stern 1950, p. 210). On November 20, after her arrival in Rome, she wrote to her father:

[We] are settled in a cozy little apartment in the Piazza Barbenini [sic]. . . . The rooms are a blaze of sunshine all day, and sunshine is health. . . . May is taking lessons in water colors of Crowninshield, an excellent artist and is happy, spending her morning in his studio, and her afternoon visiting galleries with me, or driving in the lovely campagna. (ABA *Letters* 1969, L71–72, pp. 530–31).

LMA’s portrait suggests a malar rash, even after comparison to a more florid example in a standard textbook of dermatology (Rothfield 1993, p. 2144), or to other portraits of women by Healy.² We may discount the possibility that LMA wore rouge, as that was considered disreputable in her time and where she lived, and there is no evidence that she ever used any except in theatricals (Polly Longworth and Staff of Louisa May Alcott’s Orchard House, personal communications).³

CONCLUSION

Louisa May Alcott was a remarkable woman in her time, and would have been equally so in ours: bold, powerfully against slavery and for women’s rights, determinedly unmarried, dissatisfied with the small world of Concord. She had to become famous through the one avenue available to respectable women in the 19th century: writing. Ironically, LMA’s great energy was first poured into “thrillers,” all written anonymously or under pseudonyms, and only identified a century later.

What compels writers to write? Harold Bloom (1994) teaches that “the free and solitary self writes in order to overcome mortality” (p. 489). In LMA’s case, the semi-biographic novels about the March family that first made her famous were written for children at the behest of her publishers. They well supported her extended family, which could not depend on the visionary yet impractical patriarch Bronson Alcott. The writing entailed a high personal cost to LMA, whose

²For other Healy portraits of women, see <http://www.mfah.org/collection.asp?par1=17&par2=&par3=64&par6=3&par4=788&lgc=4¤tPage=1> or http://www.speedmuseum.org/healy_n.html.

³An anonymous reviewer has suggested acne rosacea, but this chronic, localized, and pustular skin condition would surely have been remarked upon by LMA or others. We showed the portrait to A. Bernard Ackerman of the Ackerman Academy of Dermatopathology without mentioning our diagnostic suspicion, to which he responded: “Louisa May Alcott has a ‘butterfly blush’ that, theoretically, could be ‘normal’ for her but could also represent seborrheic dermatitis or a sign of lupus erythematosus.”

father called her “Duty’s faithful child” (Sonnet XVI, ABA 1882). As LMA reflected in her journals: “When I had the youth I had no money; now I have the money I have no time; and when I get the time, if I ever do, I shall have no health to enjoy life. I suppose it’s the discipline I need; but it’s rather hard to love the things I do and see them go by because duty chains me to my galley” (p. 191).

We now remember LMA as a “rich and varied writer” of the American Renaissance (Stern 1995, pp. xxvi–xxvii). Would that she had lived longer to continue her work. In 1872, with her health beginning to decline, LMA wrote what could serve as a poignant valedictory: “Home, and begin a new task. Twenty years ago I resolved to make the family independent if I could. At forty that is done. Debts all paid, even the outlawed ones, and we have enough to be comfortable. It has cost me my health, perhaps, but as I still live, there is more for me to do, I suppose” (LMA, *Journals* 1999, pp. 182–83). If our tentative diagnosis of autoimmune illness is correct, however, it was not the toil of writing or the burdens of duty, but rather the disease that caused her lost health, early death, and work unrealized.

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